P02030US2A(P336)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of

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WAYNE E. LAUGHLIN, and
BRUCE M. MILLER

Serial No. 10/632,343

Filed August 1, 2003

For INSULATION BOARDS AND METHODS FOR THEIR MANUFACTURE

Group Art Unit 1711

John Cooney, Examiner

Certificate of Mailing
I hereby certify that this correspondence was deposited with the United States Postal Service as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450 on March 7, 2006

Kimberly A. Bright, Secy. to Arthur M. Reginelli

DECLARATION OF DR. JOHN B. LETTS

37 C.F.R. § 1.132

Sir,

As an inventor in the subject application, I hereby declare that:

1. I am a resident of Carmel, Indiana and am an inventor in the subject application.

2. My educational background includes a B.A. in Chemistry from Indiana University and Ph.D. in Chemistry from The Ohio State University.

3. I am a named inventor in at least 7 United States letters patents.

4. I have been employed by Bridgestone Firestone Diversified Products, LLC., or its predecessor, for approximately 12 years and am presently the Technical Director of Insulation, at their Carmel, Indiana research facility.

5. I understand that the claims of the present invention have been rejected because the Examiner believes that they are obvious over U.S. Patent no. 3,882,052 to Raynor et al. or obvious over U.S. Patent No. 5,264,464 to Wishneski et al.

6. In drawing his conclusions, it appears that the Examiner has failed to consider the problem that existed in the prior art and the fact that our invention serves to alleviate or solve the problem. In order to better demonstrate the problem and solution, I offer the following comparative showing.

7. In a first series, polyisocyanurate insulation board (Exhibit A) was prepared by employing a conventional laminator. The polyisocyanurate was prepared by combining an A-side stream of reactants and a B-side stream of reactants within conventional mix heads. The B-side stream was prepared by combining an isocyanate-reactive compound (*i.e.*, polyol) and a blowing agent. The A-side stream included an isocyanate compound.

8. Three mix heads were employed to apply a polyisocyanurate mixture (foam composition) to the laminator. The three mix heads were positioned perpendicularly to the length of the laminator. The A-side stream and the B-side stream of reactants were mixed at elevated pressure within the three mix heads and released via three foam streams per mix head onto the laminator. I have attached a drawing (Exhibit B) of the position of the mix heads (11, 21, & 31) and the foam streams (12, 13, 14, 22, 23, 24, 32, 33, & 34) with respect to the laminator 10.

9. Formation of foam insulation boards was completed using conventional techniques. After trimming the edges of the board with trim saws, the boards were analyzed for compressive strength in the cross-machine direction (i.e. in a direction

perpendicular to the machine direction of the laminator) along the edge of the board at a location equidistant between the top and bottom facers. As those skilled in the art appreciate, the compressive strength along this edge is indicative of dimensional stability, and boards having poor dimensional stability are prone to inward concavity along this edge (*See e.g.,* Exhibit C).

10. Also, the boards were immediately removed from the laminator and placed in a -40° F cold box for about one hour. By placing a board into these conditions, one can also predict board dimensional stability and resistance to inward concavity along the edge of the board. After removing the board from this cold box, the degree of concavity was measured as generally shown in Exhibit C.

11. The location at which the outside edge of the outside foam stream initially contacted the facer (after its release from the mix head) was marked on both sides, and the distance from this outside edge of the outside stream to the edge of the facer was measured. (*See e.g.,* Exhibit B).

12. A second series of insulation boards were prepared using procedures similar to those described above except that three liters of nitrogen per minute was added along with the blowing agents. The addition of the nitrogen to the composition caused a noticeable change in the characteristics of the foam leaving the mix head. In particular, the foam was noticeably thicker (*i.e.,* frothy), less runny, and had a noticeable volume change. As with the previous runs, the location at which the outside edge of the outside foam stream initially contacted the facer was marked, and the distance from the edge of

the facer to this point of contact on the facer was measured. The boards were likewise analyzed for compressive strength in the cross-machine direction, and the degree of concavity was measured after exposure to the cold box (*See e.g.*, Exhibit C).

13. The following table sets forth the results of the distance measurements described above, the compressive strength measurements, and the cold box change.

Nitrogen Addition	Distance of Outside Stream from Edge*		Compression Strength (psi)		Concavity (-40°C)	
	Side 1	Side 2	Side 1	Side 2	Side 1	Side 2
Yes	1.5"	0.75"	8.8	11.4	1/16"	1/32"
No	2.125"	1.875"	5.2	7.7	3/8"	¼"

14. The data in the proceeding table evidences several factors. First, the addition of nitrogen resulted in an increase in volume of the foam as it left the mix head as evidenced by the decrease in distance between the point of contact of the outside edge of the outside foam stream to the edge of the facer. Notably, this change in distance occurred without moving the position of the mix head or foam streams. For example, the distance at which the foam contacted the laminator was reduced from 2.1 inches to 1.5 inches by addition of the nitrogen on Side 1, and from 1.875" to 0.75" on Side 2. At the same time, the compressive strength in the cross machine direction along the edges of the board increased with the addition of nitrogen. Likewise, on Side 1 the concavity decreased from 3/8" to 1/16" and on Side 2 the concavity decreased from ¼" to 1/32".

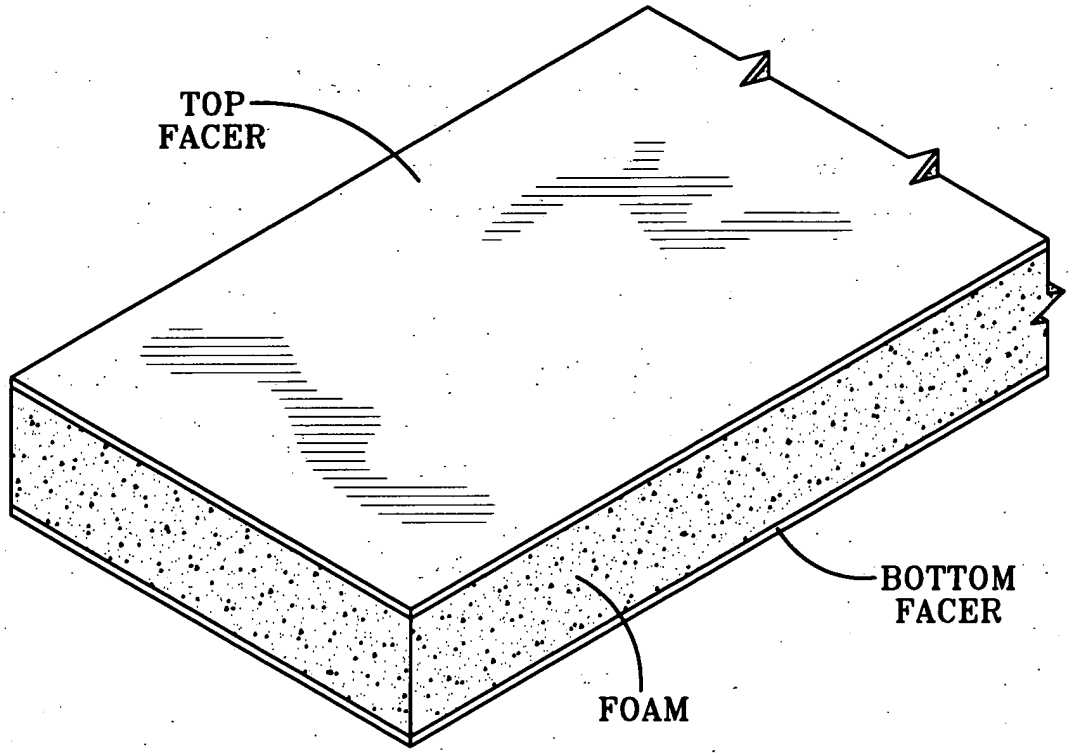
15. I declare that all statements made herein of my knowledge are true and that all statements made on information and belief are believed to be true and, further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of

Title 18 of the U.S. Code and that such willful false statements may jeopardize the validity of this application and any patent issuing thereon.

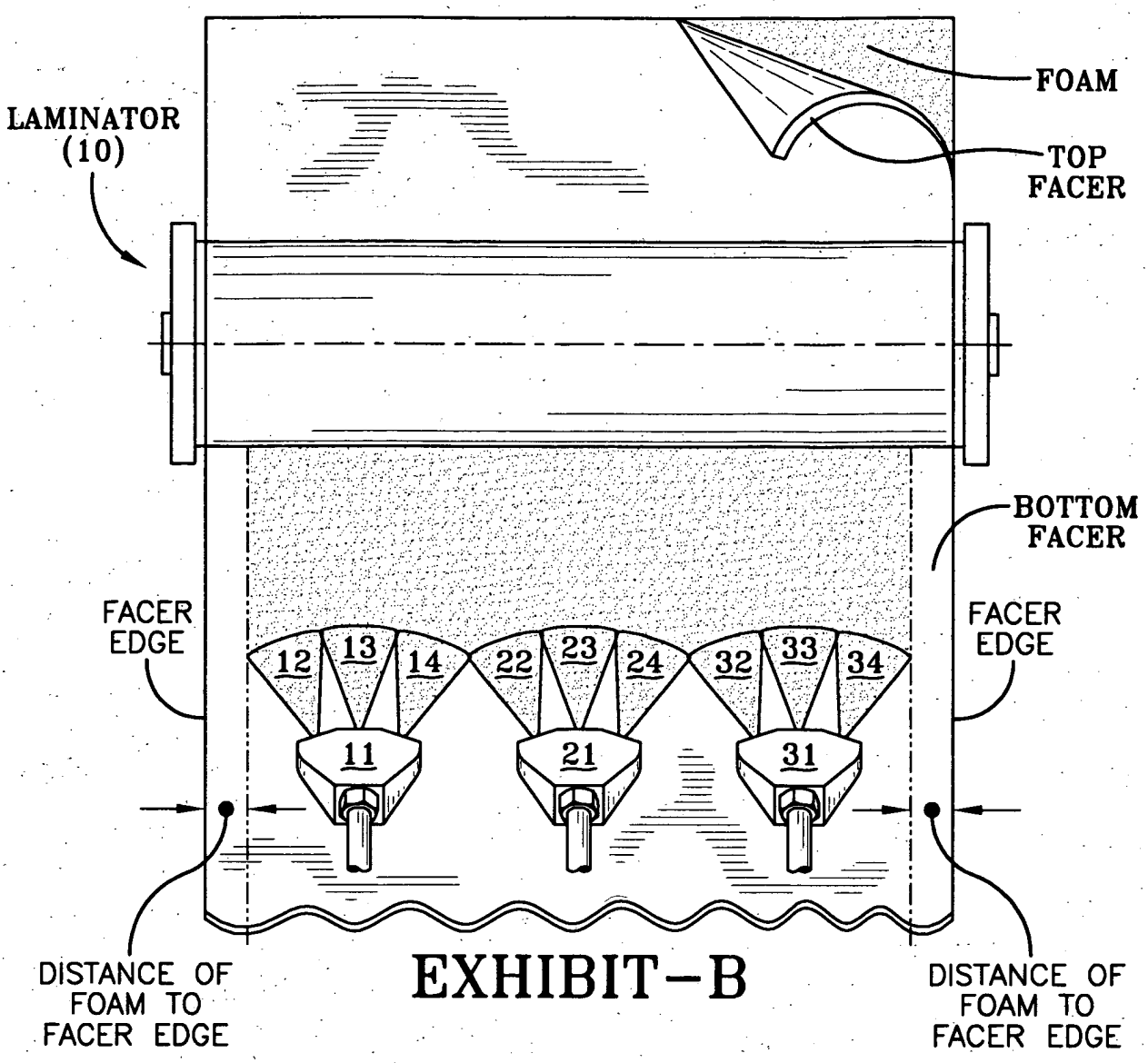
Respectfully submitted,

John B. Letts, Ph.D.

Date: 3/7/06



EXHIBIT–A



EXHIBIT–B

EXHIBIT–C